6. Monotone Submatrix

Program Name: Monotone.java **Input File: monotone.dat**

A matrix is said to be monotone if all elements in each row are strictly non-decreasing when read from left to right and the elements in each column are strictly non-decreasing when read from top to bottom.

A submatrix of a given matrix is a rectangular region of the matrix containing only consecutive rows and columns. The size of a matrix or submatrix is the number of elements it contains. Given a matrix, you will determine its largest monotone submatrix.

Input

The first line of input will contain a single integer `n` that indicates the number of matrices to follow. For each matrix, the first line will contain two integers `r c` that denote the number of rows and columns respectively in the matrix. The following `r` lines will contain `c` positive integers less than 100, each separated by a space.

Output

For each matrix, you will print the largest monotone submatrix contained in the given matrix. Print a blank line after each of the submatrices. Assume that each matrix will have only one largest submatrix. Assume also that there is a minimum size for the submatrix of 2 rows and 2 columns.

Notes:

- A space at the end of each line is optional.
- A blank line at the end of the last submatrix is optional.

Example Input File

```
2
5 5
17 12 13 15 20
12 13 16 17 22
8 8 16 18 23
7 9 17 19 25
9 9 9 20 25
5 7
7 8 9 10 12 12 15
9 11 14 10 19 2 45
12 13 18 2 25 45 66
11 13 18 25 28 29 77
14 16 19 29 35 44 88
```

Example Output to Screen

```
13 15 20
16 17 22
16 18 23
17 19 25

11 13 18 25 28 29 77
14 16 19 29 35 44 88
```